Amendments to the Claims:

Listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A magnetic sensor, comprising:
   a. a giant-magnetoresistive sensing layer comprising a ferromagnetic free layer; and
   b. a hard bias layer positioned and configured to maintain the free layer in a single-domain state,

   wherein the hard bias layer has a coercivity of at least 2,000 Oe.

2. (Original) The sensor of claim 1, wherein the hard bias layer has a coercivity of at least 2,300 Oe.

3. (Original) The sensor of claim 1, wherein the hard bias layer has a thickness of not more than 60 nm.

4. (Original) The sensor of claim 1, wherein the hard bias layer comprises:
   a. a seed layer comprising an alloy between two elements chosen from the group consisting essentially of W, Mo, Cr, V, Nb, Ta, Ti, Hf and Zr, wherein the two elements have different crystal structures; and
   b. a permanent magnetic layer deposited on the seed layer, wherein the permanent magnetic layer comprises an alloy comprising Co and Pt.

5. (Original) The sensor of claim 4, wherein the seed layer comprises TiW with 1 to 15 atomic percent W, and wherein the permanent magnetic layer comprises CoPt.

6. (Original) The sensor of claim 4 wherein the seed layer comprises TiW with 1to 15 atomic percent W, and wherein the permanent magnetic layer comprise CoPt*x*, wherein *x* is an element chosen from the group consisting essentially of B, Cr, Ta, C, Zr, Rh and Re.

7. (Original) The sensor of claim 5, wherein the hard bias layer has a coercivity of at least 2,300 Oe.

8. (Original) The sensor of claim 5, wherein the hard bias layer has a coercivity of at least 2,500 Oe.

9. (Original) The sensor of claim 6, wherein the hard bias layer has a coercivity of at least 2,300 Oe.

10. (Original The sensor of claim 6, wherein the hard bias layer has a coercivity of at least 2,500 Oe.

11. (Original) The sensor of claim 1, wherein the hard bias layer comprises:

a. a seed layer comprising an alloy between two elements chosen from the group consisting essentially of W, Mo, Cr, V, Nb, Ta, Ti, Hf and Zr, wherein the two elements have different crystal structures; and

b. a permanent magnetic layer formed on the seed layer, wherein the permanent magnetic layer comprises a material chosen from the group consisting essentially of Co_3Pt, $SmCo_5$ and alloys FePt, FePd, FeNdB, and MnAl.

12. (Original) The sensor of claim 4, wherein the seed layer further comprises a metallic layer bonded to the alloy layer comprising the alloy, wherein the permanent magnetic layer is in contact with the layer comprising the alloy.

13. (Original) The sensor of claim 12, wherein the metallic layer comprises a soft magnetic material.

14. (Original) The sensor of claim 13, wherein the soft magnetic material is chosen from the members of the group consisting essentially of Cr, Ta, CrZnNb and an Fe-Al-Si alloy.

15. (Original) A magnetic sensor, comprising:

a. a giant-magnetoresistive sensing layer comprising a ferromagnetic free layer having a saturation magnetization; and

b. a hard bias layer positioned to maintain the free layer in a single-domain state, and having a magnetic remnance times thickness at least two times the value of the saturation magnetization times thickness of the free layer.

16. (Currently Amended) A magnetic disk drive system, comprising:

a. a surface of a magnetic media;

c. a magnetic sensor ~~of claim 1~~ comprising:

a giant-magnetoresistive sensing layer comprising a ferromagnetic free layer; and

a hard bias layer positioned and configured to maintain the free layer in a single-domain state, the hard bias layer having a coercivity of at least 2,000 Oe, wherein the magnetic sensor is positioned in proximity to the surface of the magnetic media; and

b. a driving mechanism configured to cause relative motion between the surface and the sensor.

17. (Currently Amended) A method of making a magnetic sensor, the method comprising:

a. forming a giant-magneto-resistive sensing layer having a top surface, a bottom surface and at least a side surface intersecting the top and bottom surfaces, at an angle substantially different from 180 degrees;

b. depositing a seed layer abutting the sensing layer at the side surface, the seed layer comprising an alloy ~~between~~ that includes two elements chosen from the group consisting essentially of W, Mo, Cr, V, Nb, Ta, Ti, Hf and Zr, wherein the two elements have different crystal structures; and

c. depositing, subsequent to step (b), a layer of permanent magnetic material on the seed layer.

18. (Currently Amended) A magnetic sensor, comprising:

a. a giant-magnetoresistive sensing layer comprising a ferromagnetic free layer; and

b. means for maintaining the free layer in a single-domain state that includes a hard bias layer having a coercivity of at least 2,000 Oe.

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19. (Currently Amended) A method for making a magnetic sensor, the method comprising:

a. providing a giant-magetoresistive sensing layer having a ferromagnetic free layer; and

b. maintaining the free layer in a single-domain state with a hard bias layer having a coercivity of at least 2,000 Oe and having a magnetic remnance times thickness at least two times the value of a saturation magnetization times thickness of the free layer.

20. (Canceled)